

NOTES ON LACUNA FROM THE CALIFORNIA COAST.

BY A. M. STRONG

Dr. Dall in his List of Northwest Coast Marine Shellbearing Mollusea gives nine species and varieties of *Lacuna* as occurring on the California Coast. The ranges and references given indicate a considerable revision in the nomenclature of the genus. The following notes give a brief review of the California species.

Lacuna divaricata Fab., 1780 (Fauna Gronlandica, p. 392), is a very variable circumboreal shell with a wide range. In the Pacific it is listed as ranging from Norton Sound, Alaska, to Santa Barbara, California. Tryon's Man. Conch., vol. 9, p. 265, gives a long list of synonyms including *L. vineta* Mtg., *L. solidula* Loven, and *L. ?var. compacta* Cpr. The first of these is mentioned by Carpenter and others from Alaska but it is now considered by Dr. Bartsch to be a distinct Atlantic species. (Nautilus, vol. 35, p. 89). The second is also accepted as a distinct species occurring in both the Atlantic and Pacific but the position of the third is left uncertain. The typical form of the species is figured in Tryon's Man. Conch., vol. 9, pl. 50, fig. 75.

Lacuna solidula Loven, 1846 (Index Moll. Scand., p. 23), is listed by Dr. Dall as occurring in the Pacific from Puget Sound to San Diego. Dr. Baker adds Ellamar, Alaska (Nautilus, vol. 24, p. 44). It is figured in Tryon's Man. Conch., vol. 9, pl. 50, fig. 69. Dr. Arnold recognizes it as a Pleistocene fossil in Southern California (Pal. San Pedro, p. 303), and gives as synonyms *Littorina pedroana* Conr. and *Modolia striata* Gabb.

Dr. Gould described a shell from Puget Sound under the name of *Lacuna carinata* (Proc. Boston Soc. Nat. Hist., 1848, p. 75), which Dr. Carpenter considered to be the same as *L. solidula* Loven, from the Atlantic. Dr. Arnold described a Pleistocene fossil from San Pedro as *L. compacta* Cpr. (Pal. San Pedro, p. 302), and for a figure referred to Tryon's Man. Conch., vol. 9, pl. 50, fig. 71. This is the figure for *L. carinata*

Gould. Dr. Carpenter's shell was described as *Lacuna* (? *solidula* var.) *compacta* Cpr., from the Swan collection at Neah Bay, Wash. (Ann. & Mag. Nat. Hist., vol. 14, 1864, p. 429). If the descriptions correctly represent the type specimens these three would all seem to be the same shell, which should take the name of *Lacuna solidula* var. *carinata* Gould. For range, Dr. Arnold gives, living, Vancouver district (Carpenter). Specimens from Dana Cove, Orange County, California, have been identified by Dr. Dall as *L. (solidula* var.) *carinata* Gould.

Lacuna porrecta Cpr., 1864, and varieties *effusa* Cpr. and *exaequata* Cpr., were described from the Swan collection at Neah Bay, Wash. (Ann. & Mag. Nat. Hist., vol. 14, p. 429). The species is listed as ranging from Bering Sea to San Diego and is figured in Tryon's Man. Conch., vol. 9, pl. 50, fig. 55, and in Bull. U. S. Nat. Mus., No. 112, pl. 14, fig. 2. Variety *effusa* Cpr. is listed as ranging from Fuea Straits to San Francisco, while variety *exaequata* Cpr. is only known from the type locality. Both forms are figured with the typical in Tryon's Man., figs. 56 and 57. A third variety, *puteoloides* (Cpr. MS.) Dall, 1919 (Proc. U. S. Nat. Mus., vol. 56, p. 349), is listed from Lobitas, California, and remains unfigured. Dr. Arnold recognizes the species as a Pleistocene fossil in Southern California (Pal. San Pedro, p. 303).

Lacuna unifasciata Cpr., and variety *aurantiaca* Cpr., were described from Col. Jewett's collecting at Santa Barbara (Proc. Zool. Soc., London, 1856, p. 205). The name *unifasciata* Cpr. has been applied to a group of California shells which Dr. Dall seemingly divides into three species. He gives the shell figured in Tryon's Man. Conch., vol. 9, pl. 50, fig. 74, as the true *unifasciata* of Dr. Carpenter. The range is given as Santa Barbara, California, to Magdalena Bay, Lower California. Variety *aurantiaca* Cpr. has not been figured, the range is given as from Santa Barbara to Point Abreojos, Lower California.

Lacuna marmorata Dall, 1919 (Proc. U. S. Nat. Mus., vol. 56, p. 348) is the shell described in Keep's West Coast Shells and listed in Packard's Mollusean Fauna from San Francisco

Bay as *L. unifasciata* Cpr. It is figured in Tryon's Man. Conch., vol. 9, pl. 50, fig. 58, as *L. variegata* Cpr. The range is given as from Saginaw Bay, Alaska, to San Diego, California. This seems to be the most common species in California.

Lacuna variegata Cpr., 1864, was described from the Swan collecting at Neah Bay, Wash. (Ann. & Mag. Nat. Hist., vol. 14, p. 429). Of the figures given in Tryon's Man. Conch., vol. 9, pl. 50, Dr. Dall considers fig. 64 to come nearest to it. This figure is given as *L. fusca* Binney, a form of *L. divariata* Fab. The range is given as from Neah Bay, Wash. to Monterey, but it has been collected at several points in Southern California as far south as Reef Point, Orange County.

The last three species and var. *aurantiaca* Cpr. are quite similar in form and texture, but in typical specimens the color pattern is quite different. *L. unifasciata* Cpr. is uniformly light brown with a narrow brown line on the keel of the body whorl. Var. *aurantiaca* Cpr. is orange white without color markings. In *L. marmorata* Dall, the keel of the body whorl is marked by alternating white and brown spots and a spotted pattern frequently extends over more or less of the shell. The colors of *L. variegata* Cpr. are clouded or in zigzag stripes and the keel of the body whorl is often marked by white splashes. The details of the color pattern vary considerably and fade in dead shells and cabinet specimens. If the separation into different species is to be based on this color pattern, var. *aurantiaca* Cpr. should be given specific rank. It might just as well be a variety of one species as of the other.

NOTES ON ACANTHINA FROM CALIFORNIA.

BY A. M. STRONG

The proper arrangement of the various forms belonging to the genus *Acanthina*, formerly *Monoceros*, which are to be found in California has been a puzzle to all the writers. The few specimens which reached the early writers were seemingly easily separated into distinct species and a number were